rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The Examiner again rejected claim 1 indicating that Murakimi et al. discloses in Figs. 12-14 that optical fibers legs leave the plane of the flexible substrate. The Examiner referred Applicant to Fig. 13, where the reference allegedly shows that leg (31) is clearly leaving the plane of the substrate (32). Office Action at p. 2. The Examiner then indicated that reference shows the legs being couple to rows of inlets (44), and when the inlets are stacked, the optical fiber legs would be arranged in a stacked configuration.

Despite the Examiner's further consideration of the reference and the claims, Applicants maintain that the reference does not disclose or suggest the claimed invention as suggested by the Examiner.

Claim 1 requires, inter alia, a plurality of optical fibers mounted so as to lie in a common plane upon a substrate, with a plurality of groups of optical fibers proximate an edge of the substrate, the fibers of a first group extending toward the optical fibers of a second group, and a plurality of legs extending outwardly from the edge of the main body, the legs disposed in a stacked configuration in which at least one leg overlies another leg such that at least one leg lies at least partially outside of the common plane. The common plane, as recited in the claim, is the plane where the optical fibers lie on the flexible substrate. As such, and as explained in the specification at pages 9-10 and shown in particular in Figs. 2 & 3, at least one of the legs of the optical fibers leave the common plane and hence the flexible substrate.

The Examiner asserts that the legs 31 in the reference leave the plane of the substrate 32.[1] This is simply impossible, given the construction of the optical connecting article in Murakimi et al. First, Applicants bring to the attention of the Examiner that the embodiment in Figs. 12 and 13 is different from the embodiment illustrated in Fig. 14. The embodiment in Figs. 12 and 13 is the third embodiment (paragraph 0032 and 0033), while Fig. 14 illustrates the fourth embodiment (paragraph 0034). Furthermore, all of the optical connecting articles disclosed in the reference appear to be manufactured in the same way as the embodiment in Figs. 1-5. The optical connecting article in those figures has a substrate 11 on which an adhesive 10 is placed and the optical fibers 2 are then placed on the adhesive and covered with a coating member 12. A predetermined cutting knife is used to cut away the substrate to form the legs or branches. See paragraphs 0050-0051. By definition then, the legs 31 (analogous to the legs or branches (4) in the first embodiment) are always in the common plane (i.e., the plane in which the optical fibers lie on the substrate) since they are always adhered to the substrate. Thus, it is impossible for one leg of optical fibers to lie at least partially outside the common plane of the main body as required by the claim.

Additionally, the Examiner has apparently ignored some of the elements in the claim when the Examiner has failed to indicated where in the reference "the optical fibers [are] arranged in a plurality of groups proximate an edge of said substrate with each group including at least one optical fiber" on the main body as required by the claim. On page 5, the Examiner simply recites the elements of the claim but does not (and Applicants assert cannot) show where

[1] Applicants assume that the Examiner means the claimed common plane when referring to the plane of the substrate in responding to this Office Action.

this limitation is disclosed. The Examiner again fails to indicate where in the reference the claim limitation of fibers of a first group extending toward the optical fibers of a second group is disclosed. Finally, the Examiner has also failed to indicate where the matrix material is disclosed in the reference for the plurality of legs for binding the optical fibers of the respective group together as also required by claim 1.

The optical connecting article disclosed Murakimi et al. is intended to address and solve a different problem than that of the present invention. The Examiner has apparently taken a reference that discloses optical fibers on a substrate and attempted to interpret it so as to come within the claims of the present invention. However, as indicated above and for the additional reasons cited in the prior response by Applicants, the reference simply does not disclose or suggest the claimed invention. Claim 1 is allowable for at least the reasons noted above and in the prior response.

Claims 2-5, depending from allowable claim 1, are then also allowable for at least the same reasons. There are also other reasons that these dependent claims are allowable.

In rejecting claim 2 in the present Office Action, the Examiner now alleges that Figs. 12 (page 6) and 13 (page 3) clearly shows the invention claimed in claim 2. However, Applicants assert that the Examiner is still incorrect in that assertion. In addition to the deficiencies of the reference noted above with respect to claim 1, the reference also fails to disclose a plurality of groups of optical fibers extending in a parallel, spaced apart arrangement across a portion of the flexible substrate or the second group of optical fibers overlies a first optical group on the main body as required by the claim.

With respect to claims 3 and 4, the Examiner only indicated that the connectors (6,33) are mounted upon the respective groups of optical fibers proximate an edge of the main body. Office Action at p. 6. In fact, the Examiner highlighted that there are rows of inlets with multiple connectors rather than one. Office Action at p. 2. However, claim 3 requires that there be a first fiber optic connector mounted on the plurality of legs, not multiple connectors. Therefore, this claim is also allowable. Claim 4 also requires that there be a plurality of second fiber optic connectors mounted proximate another edge. This claim is allowable for at least the reason that is dependent from claim 3.

With respect to claim 5, the Examiner baldly asserts that the reference discloses matrix material of at least one leg comprises a coating such that the respective leg (43) is independent of the flexible substrate. However, Applicants are unable to find the mention of a matrix material in the reference. While the reference does mention a coating material, that coating material is used in a different manner than the matrix material of the present invention. Also, as indicated above, the legs (43) are not independent of the flexible substrate. Therefore, claims 2-5 are allowable for these additional reasons.

The Examiner rejected claims 6-10 indicating that Murakimi et al. clearly shows the legs being coupled to row of inlets (44). The optical connecting article (30) is used to couple inlets that are stacked, then the optical fiber legs (31) would also be arranged in a stacked configuration where the optical legs overlie one another. Office Action at p. 3. The Examiner disagreed with Applicants' interpretation of the reference and the arguments. Id.

Claim 6 requires, inter alia, a plurality of legs extending outwardly from the main body

in a stacked configuration in which at least one leg overlies another leg and a matrix material for binding the optical fibers of respective groups together, the matrix material comprising a coating such that the leg is independent of the flexible substrate. See also Office Action at pp. 6-7. As noted above, the optical fibers in the embodiments in the reference are not in any way, shape or form independent of the flexible substrate. For this reason alone, claim 6 is allowable. However, Applicants continue to assert that the reference does not disclose optical fibers extending outwardly in a stacked configuration as required by claim 6. Applicants again note that all of the optical fibers in the reference are attached to the flexible substrate in a flat configuration. See Abstract at ll. 3-4. As such, the optical fibers in the reference are not stacked as required by the claims even if the inlets are located above one another.

Claims 7-10, depending from allowable claim 6, are also allowable for at least the same reasons. These claims also contain other elements or limitations that are also not disclosed or suggested in Murakimi et al. The Examiner has now admitted on the record that the reference only discloses a connector connected to each of optical fiber leg. Office Action at pp. 3-4 and p. 7. This simply should end the matter for claim 7, which requires that the "a first fiber optic connector mounted upon said plurality of legs in the stacked configuration." However, the Examiner asserts that the multiple connectors may be connected to a single connector (A,B). Id at p. 4. However, A,B are optical components, e.g., laser diode or a photodiode, that are connected to the optical fibers by a plurality of fiber optic connectors. See paragraph 0049. Thus, the reference fails to disclose or suggest such a configuration. Applicants also note that optical connecting article in Fig. 1 (where A,B are disclosed) is also mounted and fixed on a

hard plate, preventing the optical fibers from being in a stacked configuration as required by the claim.

The Examiner rejected claim 8 and indicated that "Murakimi et al. discloses that each optical fiber extends from a respective first end upon with the first fiber optic connector (6,33) is mounted, across the flexible substrate (32,42) to an opposed second end, and wherein the optical circuit further comprises a plurality of second fiber optic connectors (6,33) mounted upon the second ends of the optical fibers (2) of respective groups." Office Action at p. 7. However, the Examiner has ignored the limitation that a first connector is mounted on a plurality of legs in a stacked configuration and then those optical fibers cross the flexible substrate to the opposed second end. Without waiving any arguments regarding the limitation of the opposed second end, the reference does not disclose the optical fibers in a stacked configuration and mounted to a first connector crossing the flexible substrate to a plurality of second fiber optic connectors. Thus, claim 8 is allowable.

With respect to claim 10, the Examiner asserted, again without indicating any such disclosure in the reference, that it discloses that a group of optical fibers separates from the flexible substrate (32) and transitions so as to overlie the other group of optical fibers with the other group of optical fibers is supported by the flexible substrate. The Examiner only referred to Fig. 12 and its respective portion of the specification. Office Action at p. 7. However, there is no such disclosure or suggestion in the reference. As noted above, the optical fibers in the reference are all attached to the flexible substrate. Thus, this claim is allowable for this additional reason.

The Examiner then rejected claims 16-18 and 21, indicating that the reference discloses putting a matrix material on the optical fibers in the first group after they were positioned to overlie the second group. However, the Examiner has not indicated where the matrix material is disclosed in the reference. Additionally, the matrix material must coat the first group of optical fibers. Applicant asserts that the coating member 12 of the reference that encapsulates the optical fibers cannot be equated with the claimed matrix material as the coating member 12 only secures the optical fibers to the substrate. The matrix material in claim 16 is clearly a different material and performs a different function. In fact, the specification indicates that the present invention may have a conformal coating (equivalent to the coating member 12 of the reference) to cover the optical fibers that are adhered to the substrate. See specification at pp. 7 and 10. The specification also indicates that the group of optical fibers that are moved out of the common plane – the first group of fibers in claim 16 – are not covered with the conformal coating, but are ribbonized and are preferably bound or fixed together by means of a matrix material. Specification at p. 10. There is no such matrix material in the reference or applied to any of the optical fibers. Therefore, the reference does not disclose or suggest the method as claimed in claim 16 and it is allowable for at least this reason. Claims 17, 18, and 21, depending from claim 16, are allowable for at least the same reasons.

The Examiner then rejected claims 11-15 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,240,232 to Schneider et al. However, from the specific claim rejections, the Examiner is rejecting claims 11-15 under 35 U.S.C. §103(a) as being unpatentable over Schneider et al. in view of Murakimi et al.

Specifically, the Examiner cited Schneider et al. as disclosing an optical circuit, including a main body comprising a substrate (1) and a plurality of optical waveguides mounted upon the substrate and arranged in a plurality of groups proximate an edge of the substrate with each group including at least one optical waveguide; and a plurality of legs including first (3), second (4) and third (5) legs extending outwardly from the edge of the main body, each leg comprising the optical waveguide of a respective group and a matrix material for binding the optical fibers of the respective group together, the legs disposed in a stacked configuration with the first and second legs transitioning so as to overlie the third leg at different locations. Office Action at p. 9. The Examiner admitted that the Schneider et al. does not disclose optical fibers or that the substrate is flexible. The Examiner indicated that because the references are from the same field of endeavor, the purpose of Murakimi et al. would have been recognized in the pertinent art of Schneider et al., and it would have been obvious to use the optical fibers and the flexible substrate from Murakimi et al. with the device of Schneider et al. Office Action at p. 10.

Applicant disagrees that the optical fibers and flexible substrate of Murakimi et al. could be used with the device of Schneider et al. First, the optical waveguides disclosed in Schneider et al. are made in a very specific and particular way and, as the Applicants understand, with the single beam entry ends 8 to receive the signals from the laser beams. Therefore, there are not individual ends on the optical waveguides in the reference as with optical fibers in the claimed invention that would be able to be mounted on a fiber optic connector. Applicants also believe

that the substrate in Schneider et al. could not be flexible, as the optical waveguides would be detrimentally damaged if they were allowed to flex, either during use or manufacture.

Moreover, Applicants do not believe that one of ordinary skill in the art would combine these references and the Examiner's attempt to do so is a result of impermissible hindsight. Applicants understand that the optical waveguides are actually made on the substrate in Schneider et al. (see abstract) and, therefore, they could not be placed on a flexible substrate after they were manufactured as disclosed in the reference. Therefore, this fact along with the particular end (8) of the optical waveguides in Schneider et al. as discussed above prevents the combination of these two references.

Claims 1-21 are allowable for the reasons stated above and Applicants request that the Examiner pass this application to issue. If the Examiner has any questions regarding this application, the Examiner is invited to call the undersigned to discuss any issues.

Respectfully submitted,

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